SCIENCE & GOVERNMENT REPORT

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Innovation Plan: After Great Study---A Mouse

The immense review and planning operation that the Carter Administration launched in April 1978 to diagnose and prescribe for purported anemia in US industrial innovation has at last delivered its recommendations. The private response around Washington is that all those months of frenzied meetings, tight deadlines, and thousands of man and woman hours around paper-strewn committee tables were scarcely necessary to produce the policy mouse that is formally titled the President's Industrial Innovation Initiatives.

Apart from the wholly justified and sensible public-interest group complaint that the nine-point program is simply gung-ho for innovation without reference as to innovation for what and at what cost, the so-called initiatives are likely to be easily swallowed by the political and economic system. The reason for this, quite simply, is that those points that are formulated in concrete terms of spending money to do something specific—such as collecting information on foreign technology—

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muss no feathers and cost relatively little. (After much insistent questioning at press briefings and in Congress, Administration officials conceded that the price tag for this long-touted plan to revivify industrial R&D will be $55 million next year—which is a preposterously small sum, given the Administration's lamentations about the presumed decline of our industrial innovativeness). The politically spicy items, however, such as patent-law changes and relaxation of anti-trust restrictions on R&D collaboration by competing firms—well, Mr. Carter says he plans to seek a "uniform" patent law for all federal agencies, and he's asking the Justice Department to "clarify its position on collaboration among firms in research and development." Left unexplained was why the President of the United States hasn't already told the Department of Justice to get moving on this issue, which, after all, has been around since the early 1960s, when John F. Kennedy's Administration said something ought to be done to promote industrial R&D cooperation.

In any case, the impressario of this big exercise, Jordan Baruch, the Assistant Secretary of Commerce for Science and Technology, has a standard explanation when confronted by the fact—which he doesn't deny—that the nine-point plan is simply a rehashing of a lot of off-the-shelf technocratic stuff that's been around for years. Says Baruch: The review process was a valuable educational experience for industry, government, academe, and labor.

Baruch, who is perhaps the sunniest bureaucratic in the generally dour ranks of Washington officialdom, is understood to feel that the White House was highly accepting of the proposals that came from his office, but that when it came to putting out some money to implement them, there was disagreement on "scale," with the White House, of course, preferring less, and getting it.

Some insight into the sensitive matter of what was offered to Mr. Carter and what he chose to accept was provided at a White House briefing attended by Mr. Carter, Commerce Secretary Juanita M. Kreps, Domestic Policy chief Stuart E. Eizenstat, Science Adviser Frank Press, and Baruch.

The President and Mrs. Kreps made some introductory comments and then departed, saying Press and Baruch would answer questions. With Eizenstat there

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In Brief

The Department of Agriculture's program to bring peer review and competition into some of its research activities has survived another cliffhanger in Congress, where the program is viewed by some influential members as undermining their ability to provide goodies for their ag constituents. Final outcome: $16 million, plus $2.5 million for high-priority research.

Will the White House science office get swept into the Carter-Kennedy contest? So far no sign of it, but with Kennedy campaign aides talking about mobilizing some sort of Scientists and Engineers for Kennedy—such a one existed for John F. Kennedy—it will be interesting to see whether Carter calls upon his house scientist to help produce a response.

Some of the top brass at the American Association for the Advancement of Science are not happy about the AAAS' slick new bi-monthly magazine, *Science80.* **An interesting magazine, they're saying privately about the recently published first issue, but not so different from what's on the commercial market as to justify the AAAS involvement.**

. . . Support and Questions on Capitol Hill

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with them on the podium, they fielded a few questions. Then a reporter asked Baruch to tell how the steps that were announced by the President compare with Baruch's original recommendations. Baruch started to answer, when Eizenstat abruptly stepped in and said that the question dealt with "internal" matters and should not be answered. The briefing ended soon after, and Press and Baruch went to Capitol Hill, where joint hearings on the innovation plan were being held by two subcommittees from the House and two from the Senate.

The Congressional reaction was by and large sympathetic, to the extent that many of the provisions in the innovation plan have long been talked about and advocated in Congress. But Baruch and Press were repeatedly confronted by one or another congressman bombasting on the plan's lack of tax incentives for promoting industrial R&D and its failure to come up with big money to assist small innovative firms, which everyone seems to cherish as the backbone of American industrial innovativeness, though little has been done to give them a bigger slice of the government's big R&D bundle.

The tax-incentive issue was brought up so often that Press, after explaining that the innovation plan states that the tax angle will be handled in a forthcoming tax review, finally said, with some exasperation, that he was not responsible for the overall economic policies of the Administration.

Mrs. Kreps, who was finishing out her last week as Secretary of Commerce before returning to private life, touched on the matter of "scale" in her Congressional testimony, and thereby came close to acknowledging that this Administration has no intention of plunging into the industrial scene on the often-admired scale of the Japanese government.

Noting the mammoth dimensions of the study—as though its wisdom is to be measured in quantity of participants—Mrs. Kreps recounted that 250 officials from 28 government agencies were joined in this enterprise by some 500 representatives from industry, academe, labor, and elsewhere—all contributing to presidential decisions "based on a year and a half of intensive work."

Then she observed that "In making his decisions, the President has sought to define an appropriate range and level of federal activity consistent with the needs of our society and the framework of our economic system. Because these policies represent something of a break with the past, the President has also sought to determine the appropriate scale of activities to be taken initially. Accordingly, the President is proposing a number of steps, all of which recognize the need to rely upon the private sector, which will continue to have the ultimate responsibility for innovation within our economic system."

Then, taking up Baruch's theme of the educational role of the study—not surprising, since Mrs. Kreps'

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Lab Jobs for Minority Youths

The White House has announced a plan to provide "apprenticeships" in research laboratories for at least 1000 minority high school students next summer. The plan, developed by White House Science Adviser Frank Press and the Director of the Office of Management and Budget, James McIntyre, calls for participation by the departments of Agriculture, Defense, and Energy, the National Institutes of Health, NASA, and the Environmental Protection Agency.

A White House announcement states that "Individual researchers who wish to participate in the program will submit a supplemental request to existing or pending research grants and contracts. The request will state the kinds of work experience which can be offered, the routes through which interested students will be sought in local or other high schools, and the special activities that will be organized to provide educational enrichment beyond the work itself.

"The student and the researchers will be expected to submit a brief evaluation of the experience, to guide assessment and expansion of the program."

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The President's Nine-Point Innovation Plan

The following, taken from a White House "fact sheet," is a summary of the President's nine-point Industrial Innovation Initiatives:

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1. Enhancing the Transfer of Information: The National Technical Information Service (NTIS) will set up programs to promote the flow of data from government laboratories to industrial organizations; the Fiscal 1981 cost is $1.2 million, "and subsequent costs will not exceed $2 million per year." NTIS will spend $1.8 million in the first year of a program to expand US access to foreign scientific and technical literature. In addition, another $2.4 million will be available in FY 1981 for government officials to "interview volunteer returning US overseas visitors about observed foreign technological developments, collect reports from our science counselors, and collect photographs, and other unpublished information." It will all go into the NTIS system.

2. Increasing Technical Knowledge: Four centers to "develop and transfer generic technologies"—i.e., knowledge and skills of broad industrial value, such as welding and corrosion prevention—will be established in FY 1981, with joint government-industry funding. Total cost is expected to be $6.8 million, with the government share dropping to 20 per cent or less in the fifth year. Three will be sponsored by the Department of Commerce, one by the National Science Foundation. The Office of Management and Budget will study the costs of developing technologies to meet regulatory standards, and examine federal research activities related to those technologies. Finally, NSF will be budgeted for $20 million in FY 1981 "for the support of high-quality R&D projects that are jointly proposed by industry-university research teams, "with subsequent year support at a similar level"; NSF "will work with" other major R&D agencies—including Defense, Energy, Environmental Protection, and NASA—to help them develop similar university-industry links, with the overall multi-agency program aiming for a total of $150 million.

3. Strengthening the Patent System. "The President has decided to seek legislation that would establish a *uniform* (original italics) government policy with exclusive licenses in the field of use. Title to the patent will be retained by the Government, but the contractor will obtain exclusive licenses in fields . . . in which he agrees to commercialize the invention . . . The President also supports the retention of patent ownership by small businesses and universities." In addition, steps will be taken to simplify and speed up patenting procedures, and the Small Business Administration will extend assistance to small firms and individuals seeking patents. No funds are mentioned in connection with the patent section of the initiatives.

4. Clarifying Anti-Trust Policy. Because of "misunderstanding in industry, universities, and government in instances where cooperative research is permissible, or where cooperation is not permissible," the Justice Department will be asked "to prepare a guide to clarify its position on collaboration among firms in research and development." Also, the Justice and Commerce Departments and the Federal Trade Commission will hold discussions with industry "to dispel the perception that anti-trust policy inhibits innovation. . ."

5. Fostering the Development of Small Innovative Firms. NSF's Small Business Innovation Research Program—which helps small firms analyze new ventures and demonstrate feasibility—will be expanded from its present $2.5 million budget to $10 million in FY 1981; OMB and NSF will study bringing other agencies into this type of program, "working toward a goal of approximately $150 million annual funding." Loans of $4 million will be provided for establishing two state or regional Corporations for Innovation Development, to provide start-up capital for innovative firms; federal agencies will be directed to assist small firms in bidding

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INNOVATION *(Continued from Page 2)*

statement was drafted in Baruch's office—she said, "The lengthy process of developing the President's program has itself been important. It has heightened the awareness of the federal government and the general public to the importance of industrial innovation. The process has unquestionably improved the quality of dialog between government and industry."

Since only a few of the measures require direct legislative authority, most of the proposals can be put into effect under existing laws, though additional appropriations will be needed in most cases. As for patents and anti-trust, it is doubtful that anything clear and concrete will be forthcoming soon, since these are politically volatile issues and there is no consensus on which way to go.

But whatever happens, very little, if any of it, will happen quickly. Most of these proposals are for Fiscal 1981, which begins October 1, 1980. That means the money will not be getting to the agencies before another year or so goes by, and then, given the notorious inability of the US government to move itself on non-emergency matters, many months will be taken up in dispensing the funds.

At the joint congressional hearing, Press and Baruch were reminded of these time realities, and were asked whether anything could be done to speed things along. They said they didn't see how.—DSG

Quebec: Looking for Its Own Science Policy

Quebec. Although research and development in Canada is traditionally the responsibility of the federal government, a few of the provinces are beginning to set up their own science policies.

They all have practical reasons for doing so, since federal R&D policy has made the 1970s a dismal decade of scientific decline in Canada, and the provinces feel that their research requirements are no longer being met by Ottawa.

Quebec, however, has a particular political need for an independent research policy. Its *Parti Quebecois* government is seeking to separate Quebec from English-speaking Canada (making the province a "sovereign" nation in economic "association" with the rest of Canada) and every sovereign state sets a science policy, *n'est-ce pas?*

The formulation of Quebec's science policy is the responsibility of the Minister of State for Cultural Development, Camille Laurin, a hard-line separatist who is at best distrusted and at worst hated by the province's English-speaking minority. (Laurin was the author of the White Paper that led directly to the notorious Bill 101 making French the only official language in Quebec.) When Laurin published his Green Paper, *Towards a Scientific Research Policy for Quebec,* last Spring, the document was greeted with some relief by the Anglo research community; considering its pedigree, the paper's tone was relatively mild, though to ears innocent of the rhetoric of the *Parti Quebecois,* its consistent hostility to English-speaking Canada is still striking.

The Green Paper (whose color designation means that it is a discussion document rather than a firm policy statement) contains much philosophizing in its 222 pages and relatively few practical suggestions for the "fresh approach" that Quebec research needs. Some of the major themes and contentions are:

- Ottawa has consistently deprived Quebec of its fair share of federal research funds and given next-door Ontario much more than it deserves. Federal science policy ignores Quebec's real interests.
- The university sector is unduly dominant in Quebec; university research is fragmented, uncoordinated, and inefficient. Researchers are isolated from industry and take no account of the economic and social needs of Quebec.
- Government and industrial research must be strengthened. In industry, a particular handicap is the dominance of large foreign-owned corporations which have no motive for doing research in Quebec. Special help must be given to small and medium-sized companies owned by Quebeckers. The government should set up more industrial research centers.
- The province has two independent and quite separate research networks, one English-speaking and the other French-speaking, which collaborate and communicate remarkably little. (However the Green Paper also deplores the shortage of channels to exchange scientific and technical information in French, condemns French-speaking scientists who publish mainly in English journals, and says they should be offered incentives to publish in French—though this would presumably increase their isolation in North America).
- Quebec needs new government agencies to control and coordinate research and to set priorities.

There is no hint of what these priorities should be.

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CARTER PROPOSALS

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for government contracts, and the Small Business Administration will seek to increase the availability of venture capital for small firms.

6. Opening Federal Procurement to Innovations: Government purchasing power will be used to provide incentives for innovative firms, with "Special attention . . . to substituting performance specifications in place of design specifications. . ."

7. Improving our Regulatory System: In addition to past steps—such as creation of the Regulatory Analysis Review Group, which examines proposed regulations for cost-effectiveness and other factors—the President is proposing that regulations be considered in terms of their effects on innovation. Also, "To expedite the introduction of new drugs marketed in foreign countries," the Food and Drug Administration will be asked "to take steps to assure that our drug clearance process benefits from foreign experience."

8. Facilitating Labor/Management Adjustment to Technical Change: The secretaries of Labor and Commerce will work with labor and management to develop "a national Labor/Technology forecasting System "to attempt to forecast technological change within specific industries and to assess the implications for labor of such change."

9. Maintaining a Supportive Climate for Innovation: NSF will hold a National Conference for Deans of Business and Engineering Schools "to stimulate improved curriculum development in technology management and entrepreneurship; the President will give awards for innovation in transportation, communication, health, agriculture and food, and natural resources. Also, the Productivity Council will form a committee to monitor and encourage innovation.

No Signs of Canada's Promised Boost in R&D Spending

Ottawa. Canada's Progressive Party took power after last May's general election with the commitment to increase the proportion of national income devoted to research and development from the current 0.9 per cent of gross national product—the lowest in the 24-nation Organization for Economic Cooperation and Development—to 2.5 per cent by 1985.

So far, however, Prime Minister Joe Clark has taken no steps towards meeting this absurdly ambitious target, though the federal budget later this month is expected to include tax incentives to stimulate industrial research. Meanwhile, Clark has taken the Ministry of State for Science and Technology away from Energy Minister Ray Hnatyshyn, who held both jobs for four months, and given it to Heward Grafftey, a lawyer who was one of only three Conservatives elected to the House of Commons from Quebec. The move is depressingly reminiscent of the speed with which former Prime Minister Pierre Trudeau rotated the science portfolio amongst his ministers.

Of course, the 2.5 per cent goal is unrealistic, since it would require almost a threefold increase in real R&D expenditure for five years. The more urgent issue at the moment is whether Canada has the scientific manpower to achieve even a much smaller improvement in its R&D effort in the 1980s with a research community that was badly run down during the 1970s.

The Association of Universities and Colleges of Canada (AUCC) recently sent the federal and provincial governments a "grave and urgent warning" that "Canada will not have in five years the personnel needed even for greatly reduced domestic or foreign-aid research programs." Research teams are aging and disintegrating (and so is their equipment), and young scientists and engineers are not being trained, the AAUC said. John Kucharczyk, of the Canadian Association of Physicists, estimates that Canada would be short by 20,000 scientists if 1.5 per cent of GNP were devoted to R&D by 1983—the target the Liberal government adopted in 1978, and did almost nothing to implement before it lost the election.

Although the new provincial interest in research is a healthy development, the best contribution the provinces could make to the scientific welfare of Canada would be to upgrade the infrastructure of the universities, which are constitutionally their responsibility. Only the colleges and universities can produce new scientific manpower. Unfortunately, the signs are that provincial governments will ignore the universities' desperate need for new young faculty members and modern lab equipment—on the grounds that in Canada, as in the United States, the college-age population is going to fall substantially during the 1980s.

QUEBEC

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The Green Paper does not deal at all with the content of research; it is concerned only with the structures within which policy should be established and research carried out. There are several alternative suggestions for the best governmental science structure, including a proposal for a new science and technology minister supported by various advisory councils.

Camille Laurin and his *Bureau de la Science et de la Technologie* are currently holding a series of public meetings with representatives from government, industry, and the universities to draw out their views on the Green Paper (most participants had already submitted written briefs). Although this seems like a once-in-a-lifetime opportunity to contribute to the creation of a new national science policy, Laurin and his staff say they are deeply disappointed by the lack of interest in the proceedings displayed by the scientific and academic community and by the news media. Business and academia seem happy with the way things are organized at the moment and do not relish more government control over their research. "Give us more money and leave us alone" is the general attitude.

Another reason for their apparent indifference to the consultations may be the fairly widespread feeling that Laurin has already decided what sort of science policy he wants, and that what they say will make no difference. Michel Slivitski, Director of the Science and Technology Bureau, said this was quite untrue, insisting that the government's mind would remain open until the hearings finish this month. Then the preparation of a firm policy begins. By the Spring, Laurin hopes to publish a statement of the government's legislative intentions. But whatever the details of the new science policy, everyone agrees that is is bound to mean much more government control over research.—Clive Cookson

(The author is Washington correspondent for the London *Times Higher Education Supplement.*)

France: Budget Brings Sharp Shifts in R&D

Paris. The budget that the government recently announced for Fiscal 1980 accords to research and development the rare privilege of "real" growth above the anticipated inflation rate. But the gain is relatively small, amounting to a current-franc increase of 11.5 per cent, against an inflation estimate of about 10 per cent.

Overall, then, the new budget contributes virtually nothing to the government's often-stated ambition to increase French R&D spending so that, as a proportion of gross national product, it will be in a league with West Germany and the US, each of which spends about 2.2 per cent of its GNP on R&D, as compared with 1.8 per cent for France.

Totaling $3.44 billion, and covering all government R&D expenditures outside of the military, aeronautics, and telecommunications, the budget is noteworthy not for its generally disappointing overall amount, but for the sharply shifting priorities that are reflected in its internal allocations. These shifts can in large part be attributed to Pierre Aigrain, the Secretary of State for Research, who is striving—successfully it seems—to make public spending reflect his own strongly held ideas about the support and application of the nation's R&D resources.

Among the "losers" in this latest battle of the budget are basic physics, which, with a budget increase of only 9.1 per cent, will lose ground to inflation. Physics, it should be recalled, had long been highly influential in the politics of French research, but in recent years, in France, as elsewhere, its claim on resources has weakened. The social sciences also came out poorly, with an increase of 8.5 per cent, and environmental R&D fared even worse, receiving a raise of only 3.6 per cent.

The new pattern of priorities, reflecting goals set in the current five-year plan, is to be seen in the 16.5 per cent growth allocated for R&D in energy and raw materials; 18.8 per cent for this country's solar-energy agency, and 12.1 per cent for biology. In addition, there is a 17.9 per cent increase in the so-called research fund, a $100-million pool that the Secretary of State can draw upon, at his own discretion, to launch new programs.

This fund should be especially useful in pursuit of Aigrain's goal of separating the block funding of institutions from the support of specific programs, whether located in a single laboratory or spread among several. The recent reorganization of France's central agency for the support of basic research, the Centre National de la la Recherche Scientifique (SGR Vol. IX, No. 17), is part of this Aigrain plan, as are new directives governing the employment of scientists. These specify that to qualify for promotion, a scientist must work, directly or indirectly, on a subject that has been designated as of high priority by his superiors. The actual effects that will be produced by this system are far from clear, but the immediate effect was predictable and swift in coming: a big demonstration, participated in by an estimated 2000 persons, on October 18 in Paris.

With the 1980 budget placing an overall emphasis on industrial R&D, the government is focusing on an invigoration of engineering. In September, President Valery Giscard d'Estaing asked the Academy of Sciences to look into the state of engineering in France.

The request, an unusual one for our Academy, which has historically confined itself to publishing proceedings and passing out medals, is the work of Secretary of State for Research Aigrain, who apparently has taken some inspiration from the advisory role played by the

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In Print

Science Indicators: Improvements Needed in Design, Construction, and Interpretation, a General Accounting Office report highly critical of the most recent edition (1976) of the National Science Foundation's biennial *Science Indicators* series. *Indicators,* which has become a sort of handy desk manual for basic statistics about the scope and quality of US science vis-a-vis other nations, is faulted in the 70-page GAO report as obsessed with measuring money for science and indifferent to the nuances of scientific quality. In an appendix, NSF replies that (1) it ain't so, and (2) the forthcoming edition corrects the deficiencies cited by the GAO. Incidentally *Indicators 1978* was completed several months ago, but won't be released until the bureaucratically coagulated White House gets around to giving permission. Copies of the GAO report are available without charge. Order as follows: Report PAD 79-35, General Accounting Office, Distribution Room 1518, 441 G St. Nw., Washington, DC 20548.

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BIOSPEX: Biological Space Experiments: A Compendium of Life Sciences Experiments Carried on US Space Craft, a 312-page listing of 27 years of life-sciences experiments in space, including principal investigators, protocol, and bibliographic references. NASA Report TM 58217, $9.75, available from: National Technical Information Service, Springfield, Va. 22161.

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Sixth Report of the Director: National Heart, Lung, and Blood Institute, intended for the general public, this 95-page review focuses on last year's programs at the second biggest institute in the NIH complex; also contains a great deal of budget history and the masterplan for 1980-85. Available without charge from: National Heart, Lung, and Blood Institute, Building 31, Room 4A21, Bethesda, Md. 20205.

. . . French Academy Prodded to Advisory Role

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US National Academy of Sciences. Aigrain, in a report to Giscard d'Estaing, recommended that the gerontocratic institution be required to set a quota of under-60 new admissions, and that it be encouraged to give its advice on the state of various sectors of science and engineering.

While we wait for the Academy to stir itself, a new source of insight into high-level thinking about French R&D became available last summer with the quiet publication of a report titled, "The State of the Art in French Science and Technology." Produced by a civil servant on the staff of the Delegation Generale a la Recherche Scientifique, which works for Aigrain, the report is generally understood to reflect the Secretary of State's thinking on a number of matters of high sensitivity in the French scientific community. The report directs a great deal of criticism at the quality and efficiency of physics in the universities, and in chemistry, it recommends the merging of small, independent research teams. Biology is criticized for a number of deficiencies, among them its neglect of nutrition studies, and it gives poor marks to the French oceanographic agency.

All in all, it is unusual for a technocratic critique of this nature to become public in France. But even so, it failed to arouse much interest among the public or even in the scientific community. Though science policy was something of an issue in our last national elections, as the contenders sought to win the support of the research community with promises of bigger spending, the fact is that the public and even the scientific community pay little attention to these issues.—FS

Rev. Moon Science Pow-wow

The Reverend Moon is back with his annual conference on the Unity of the Sciences, this one to be held November 22-25 in Los Angeles, on the topic of "The Responsibility of the Academic Community in the Search for Absolute Values."

As with past conferences, many academic luminaries will participate. According to a Moon announcement, the chairman of the conference—which is the eighth to be held—is Eugene Wigner, the Princeton Nobel laureate in physics, who's an old hand at Moon conferences. Among those listed as committee chairman are Frederick Seitz, former president of both the Rokefeller University and the National Academy of Sciences, and Aurelio Peccei, of the Club of Rome.

Additional information about the conference is available from: Ted Agres, International Conference on the Unity of the Sciences, PO Box 3939, Grand Central Station, New York, N.Y. 10017; tel. (212) 997-0970.

To the Editor

With reference to the Space Shuttle note in the 15 September *Science & Government Report,* the dollar figures appear slightly confused.

The $5.15 billion was the commitment for design, development, test and evaluation of the Space Shuttle in 1971 dollars. It now appears that the total development cost will be approximately $6.1 billion in 1971 dollars, which is equivalent to about $8.7 billion in real year or escalated dollars, including an assumption on future inflation. The increase in development cost is large in absolute dollars but amounts to less than 20 per cent of the original prediction in 1971 dollars.

While I'm unsure of your source of the $11 to 12 billion estimate for total cost, the total we see for all nonrecurring shuttle costs (development, initial fleet investment for four orbiters, and initial facilities including the launch capability at KSC) is about $12 billion in real year dollars at run out.

Robert A. Frosch
Administrator
National Aeronautics and Space Administration

Since Dr. Frosch's letter, the shuttle has run into more difficulty. In a test firing of an engine on November 4, a malfunction caused what has been described by NASA officials as extensive damage. *The New York Times* quoted Myron S. Malkin, the shuttle program director, as saying that "The failure is relatively serious. We're still thinking about what we can do about it. I don't know yet what impact it will have on the shuttle."

US—W. German Energy Pact

Washington has scored another success in its efforts to get other nations to help us with the costs of big scientific projects and high-technology industrial ventures. The latest involves the current passion over synthetic fuels, for which West Germany has agreed to contribute 25 per cent of the cost of a demonstration plant that the Department of Energy plans to build near Morgantown, W. Va. Original estimates were $700 million for design and construction, but a DOE announcement says that's being revised — which almost surely means the cost will be higher.

An agreement for German participation — both by the Federal Republic and German industry — was signed in Washington October 5 by Volker Hauff, the German Minister of Research and Technology, and Charles W. Duncan, the Secretary of Energy. The new agreement follows an earlier agreement that applied only to preliminary design of the plant.

NSF Sets up Eight New Instrument Centers

The National Science Foundation's fledgling share-the-instruments program has been extended by $11.4 million and eight new regional centers, following a competition that drew over 160 applications.

Known as the Regional Instrumentation Facilities Program, the two-year-old sharing scheme is NSF's answer to the increasingly high cost of equipment for what used to be called "little science." The central facility, with visiting users, long ago became the answer to the immense costs of major installations for astronomy, particle physics, and space research. But it's only recently that NSF has come around to the view that the sharing principle should be extended to less costly, but still very expensive, instruments, located at a university, and available to users in the region. The latest round of awards are for four years each and bring the number of regional centers to 14. The new ones are:

Arizona State, $1.5 million, high-resolution electron microscopy.

Caltech, $1.2 million, high-resolution nuclear magnetic resonance spectroscopy.

University of California, $1.7 million, for establishment of the San Francisco Laser Center, including a "laser lending library" to "encourage the pursuit of high-risk innovative experiments in a cost-effective way."

The University of Illinois, $1.3 million, high-resolution nuclear magnetic resonance spectroscopy.

MIT, $1.5 million, laser spectroscopy and dynamics.

Montana State University, $1.3 million, for establishment of a facility for surface science and submicron analysis, to serve the Northeast.

University of Minnesota, $1.4 million, to establish an Upper Midwest facility for surface analysis.

Yale University, $1.2 million, high-resolution nuclear magnetic resonance spectroscopy.

Key Senate R&D Aide Leaves

John G. Stewart, one of those anonymous but indispensable specialists but for whom the US Congress would be even more mucked up than it is, is leaving the top staff post of the Senate Subcommittee on Science, Technology, and Space to become manager for planning and budget of the Tennessee Valley Authority. Stewart, a political scientist, has held various posts around Washington, and was long a close associate of the late Senator Humphrey.

For the past two years, Stewart was the chief navigator of the subcommittee, which is chaired by Adlai Stevenson III (D-Ill.), who has announced that he's had enough of the Senate and is retiring at the end of this term.

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Harvard to Study Placebo Effect

Harvard Medical School has announced the receipt of a $150,000, three-year grant from the Max C. Fleischmann Foundation, of Nevada, for a "study of the medical value of healing practices and beliefs of other eras and cultures."

The project will be headed by Herbert Benson, a cardiologist who is Associate Professor of Medicine at Harvard and Director of the Division of Behavioral Medicine at the Beth Israel Hospital, Boston. Benson has written extensively on the placebo effect and the Harvard announcement quotes him as saying that "The placebo effect is a neglected asset of patient care. Placebos are used as controls in tests of new drugs, and when the new drug fails to improve the patient's condition significantly more than the placebo, the drug is discarded. But we fail to assess the placebo effect itself as a therapeutic intervention."

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